Synthesis Lectures on
Ocean Systems Engineering

SYNTHESIS
COLLECTION OF TECHNOLOGY

Fidaa Karkori

Ship Sanitation, Health and Hygiene

An Approach to Better Welfare for Modern Seafarers

Springer

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“Water, water, everywhere,
And all the boards did shrink;
Water, water, everywhere,
Nor any drop to drink.”

—Samuel Taylor Coleridge, The Rime of the Ancient Mariner

In dedication to my Father and Mother
Mohamed Karkori and Fatima Aderoune

Preface

It is not by accident that ships have historically played a significant role in the carriage and transmission of infectious diseases around the world. Some of the earliest recorded evidence of attempts to control human disease transmission via ships dates as far back as the fourteenth century, when ports denied access to ships suspected of carrying bubonic plague. In the nineteenth century, the spread of cholera was thought to have been a consequence in the boom in merchant shipping. In a 2004 study, it is estimated that as many as 100 disease outbreaks were attributable to ship movements between 1970 and 2003. As of 2022, the global merchant fleet is smaller than in earlier years, yet the size and capacity of individual ships have grown exponentially. Whilst the risk of carrying infectious diseases is on the one hand limited by the lower number of hulls, the very fact that ships are larger today than ever before makes them a hazard waiting to happen. For this reason alone, it is imperative that the global shipping industry accepts its responsibility for ensuring the highest possible standards in ship sanitation and hygiene. This is not a burden carried by the shipping industry alone; however, the aviation industry also shares this burden, with people more mobile today than at any point in human history. Since 1999, there have been 11 major outbreaks of infectious diseases around the world. Some of these were local or regional, such as the 1999–2002 outbreak of West Nile Virus and 2006 Mumps pandemic in the US. Other outbreaks have been able to spread globally and with relative ease in part because of the globalised nature of travel and commerce. In 2003, SARS-CoV; 2009, H1N1 Virus (Swine Flu); 2012, MERS CoV; 2014, Ebola; 2016, Zika Virus; and, of course, in 2019, COVID. These events represent the risk we all face in the battle against existing, emerging and new diseases. As humans spread further into the chartered regions of Africa and Asia in search of new materials and commercial opportunities, so does the risk of contracting and spreading infections. Recognising this risk and taking appropriate actions is just the start of safeguarding against this very real modern-world problem.

It is equally important, however, to recognise that tropical and exotic diseases are not the only problem that faces the modern seafarer. Poor personal hygiene and ineffective shipboard sanitation are both key causes of common—and preventable—illnesses such as food poisoning, hepatitis, dental issues, stress and anxiety, depression, amongst many

more. Living and working at sea is a difficult and isolated existence, which affects seasoned mariners as much as those new to the profession. Whilst this book does not profess to be an encyclopaedia of medical problems and treatments, it is hoped that by following the simple advice and guidance contained in these pages the shipping industry can be a little bit healthier, and therefore safer.

Southampton, UK Fidaa Karkori
October 2023

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Abbreviations and Acronyms

°C	Degree Celsius
°F	Degree Fahrenheit
AFR	Accidental Faecal Release
AGI	Acute Gastrointestinal Illness
AIDS	Acquired Immunodeficiency Syndrome
ARI	Acute Respiratory Illness
BWEA	Ballast Water Exchange Area(s)
BWM	International Convention for the Control and Management of Ships' Ballast Water and Sediments (2004)
BWMP	Ballast Water Management Plan
BWRB	Ballast Water record Book
CCP	Critical Control Point(s)
Cfu	Colony-Forming Unit
Cm	Centimetre(s)
DMLC	Declaration of Maritime Labour Compliance
FAO	Food and Agriculture Organisation (United Nations)
FSP	Food Safety Plan or Food Safety Programme
Ft	Foot/feet
GDWQ	Guidelines for Drinking Water Quality
GMP	Garbage (rubbish) Management Plan
GRB	Garbage (rubbish) Record Book
GT	Gross Tonnes/Gross Tonnage
HACCP	Hazard Analysis and Critical Control Point
Hep. B	Hepatitis B
Hep. C	Hepatitis C
HIV	Human Immunodeficiency Virus
HPC	Heterotrophic Plate Count

HVAC	Heating, Ventilation and Air Conditioning
IEC	International Electrotechnical Commission International Electrotechnical Commission
IHR	International Health Regulations (2005)
ILO	International Labour Organisation (United Nations)
IMO	International Maritime Organisation (United Nations)
In	Inch(es)
ISM	International Management Code for the Safe Operation of Ships and for Pollution Prevention (1993, as amended)
ISO	International Organisation for Standardisation (United Nations)
Km	Kilometre(s)
LSA	Lifesaving Appliances Code (2010)
M	Metre(s)
MARPOL	International Convention for the Prevention of Pollution from Ships (1973, 1978, as amended)
MCA	UK Maritime and Coastguard Agency
MDOH	Maritime Declaration of Health
MEPC	Marine Environment Protection Committee
mg/l	Milligrams per Litre
mi	Mile(s)
MLC	Maritime Labour Certificate
MLC	Maritime Labour Convention (2006)
Mm	Millimetre(s)
NTU	Nephelometric Turbidity Unit
OWS	Oily Water Separator
PSC	Port State Control
SARS	Severe Acute Respiratory Syndrome
SMS	Safety Management System
spp.	Species
SQEP	Suitably Qualified and Experienced Personnel
SSC	Ship Sanitation Certificate
SSCC	Ship Sanitation Control Certificate
SSCEC	Ship Sanitation Control Exemption Certificate
SSOW	Safe Systems of Work
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (1978 as amended)
UK FSA	United Kingdom Food Standards Agency
UK	United Kingdom
UN	United Nations
US CDC	United States Centres for Disease Control and Prevention
US	United States

USA	United States of America
UV	Ultraviolet
WHO	World Health Organisation (United Nations)
WSP	Water Safety Plan
μS/cm	Siemens per minute, per centimetre

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Part I

Context of Health and Safety in the Maritime Environment